WEATHER, FORECASTS, AND WARNINGS.

By EDWARD H. BOWIE, District Forecaster.

Alaska.—During the first decade pressure averaged below normal. During the remainder of the month pressure was below the seasonal average over the western and above over the eastern portion. Lows occurred about the 1st, 3d–4th, 8th, 13th, 15th, 19th, 28th, and 30th; and highs about the 6th–7th, 10th–11th, 17th, and 21st–26th.

Honolulu.—Pressure was above normal except on the 4th–5th, 18th, and on the last day of the month. Lows occurred on the dates above mentioned and highs on the 2d, 10th–11th, 14th, 21st, and 26th–27th.

Iceland.—During the first and second decades pressure was almost continuously below normal, while during the last decade it was decidedly above normal. Lows occurred on the 2d–3d, 4th–5th, 8th–9th, 14th, 16th, 20th, and 27th; and highs on the 1st, 7th, 11th, 15th, 17th–18th, 23d, 25th, and 29th. The storm noted at Iceland on the 8th–9th caused severe gales along the coast and in the interior of Germany on the 9th.

Azores.—Pressure was continuously above normal, except on the 19th and last of the month, with slight fluctuations. Lows occurred on the dates above mentioned and highs on the 5th, 7th–8th, 14th, 17th, 21st, 23d, and 26th.

Siberia.—During the first half of the month western Siberia experienced extremely low pressure for the season, while over the eastern half pressure averaged above normal. From the 16th to the 23d pressure was above normal over the western portion and from that time until the end of the month it was below normal. Over eastern Siberia during the last half of the month, pressure averaged slightly below normal. Over the east Asiatic coast during the last two decades of the month pressure was almost continuously low. The progression of highs and lows across Siberia was not well defined.

In the United States the month opened with temperatures above the seasonal average in the Northwest and in the middle Atlantic, south Atlantic, and Gulf States, elsewhere temperatures were below the seasonal average. High-pressure areas were central, one over Quebec, one off the south Atlantic coast, and a third over the middle Pacific coast. Low-pressure areas were central, one over eastern Manitoba and another over northeastern Texas. By the morning of the 2d pressure had fallen over the East and there was a center of low pressure over Kentucky, with an extension of low pressure and rains thence to New England. During the 2d, storm warnings were ordered for the entire Atlantic coast, and by the morning of the 3d the storm center, greatly increased in intensity, was south of Halifax, having caused gales from Jacksonville to Eastport. Precipitation occurred from the Plains States eastward to the Atlantic coast. Part of the high-pressure area that was central over the middle Pacific coast at the beginning of the month passed inland and by the morning of the 2d was over New Mexico, causing frost in that State, warning of which was issued the previous day. By the morning of the 3d the high-pressure area was over the Texas coast, light frost being reported in southeastern Texas and in eastern and central Tennessee and northern Alabama. By the morning of the 4th the high had advanced to the middle Atlantic States causing light to killing frosts quite generally over eastern Tennessee, North Carolina, and Virginia, and the following morning it had moved eastward off the middle Atlantic coast.

A storm that was central over Alberta on the 4th moved to eastern North Dakota by the following morning, and on the morning of the 6th it was over Minnesota causing rains in the upper Mississippi Valley and the Plains States. By the 7th it was over eastern Ontario, precipitation having spread eastward into the Lower Lakes, the Ohio Valley, and the Gulf States, moving thence by the morning of the 8th to New Brunswick, and causing precipitation over the Atlantic States. The storm had passed from the region of observations by the following morning. A number of severe local storms attended this disturbance over portions of New York State during the 7th.

The following weekly forecast was issued Sunday, April 7:

> The general distribution of barometric pressure over the Northern Hemisphere is such as to indicate that in the United States the coming week will give temperatures near the seasonal average with the precipitation generally light and local. A change to considerably cooler weather will overspread the eastern districts Monday, but it will be followed by rising temperature on Tuesday and for several days thereafter.
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> Warmer weather is also probable in the Middle West and the South Monday and Tuesday. The next disturbance of importance to cross the country will appear in the far West about Wednesday, cross the Middle West about Thursday or Friday, and the Eastern States near the close of the week; it will be attended by local rains and be followed by cooler weather, which will overspread the Northwestern States Thursday or Friday.

A high pressure area that was central on the north Pacific coast on the morning of the 5th moved to southwestern Montana by the morning of the 6th. On the morning of the 7th it was over the southern Plains States; and by the following morning it was over the middle Mississippi Valley, moving thence off the Carolina coast. It caused light frost in Tennessee, Virginia, North Carolina, and Georgia, warnings of which were previously issued.

A disturbance of slight intensity passed from Alberta on the evening of the 7th to Lake Michigan by the morning of the 9th, and thence to a position off the New England coast during the following 24 hours, causing little precipitation.

An area of high pressure of slight intensity passed from the northern Plains States to the middle Atlantic coast from the 9th to 11th.

The following weekly forecast was issued Sunday, April 14:

An extensive barometric depression that now covers the Middle West will move slowly eastward and cause unsettled, showery weather the first half of the coming week in the Atlantic States and the region of the Great Lakes and rain and possibly snows Monday in the Northwestern States and the extreme upper Mississippi Valley. This disturbance, which will pass down the St. Lawrence Valley Tuesday, will be followed by cooler weather over the Middle West and the Eastern States. Unseasonably cool weather will continue the first part of the week over the northern Plains States and the Rocky Mountain and Plateau regions. The next disturbance to cross the country will appear in the far West Wednesday or Thursday and prevail over the Middle West near the close of the week; it will be attended by local rains and be preceded by a general rise in temperature and be followed by considerably colder weather, which will make its appearance in the Northwestern States Thursday or Friday.

The disturbance that appeared over the northern Plateau on the evening of the 9th moved slowly eastward during the next 24 hours and by the morning of the 12th was over southern Wyoming. During the following 24 hours the storm increased in intensity and moved to western Nebraska, and by the morning of the 13th to eastern North Dakota, during the afternoon of which day a number of tornadoes occurred in Missouri. By the morning of the 14th it was over Wisconsin with greatly increased intensity, and there was a low center of slight intensity over southwestern Texas. By the following morning the northern storm had passed northeastward into Canada. This storm caused general precipitation from the Pacific to the Atlantic coast. The storm that was central over southwestern Texas on the morning of the 15th moved to the southern Texas coast by the morning of the 16th. A number of severe local storms were reported during the night of the 16th in Louisiana, in several cases accompanied by destructive hail. By the morning of the 17th the storm was over western Tennessee with a secondary over northeastern Georgia. By the morning of the 18th the main center had passed to southern Lake Huron and the secondary was over western Virginia. On the morning of the 19th there was a center over New Brunswick, which during the next 24 hours passed to Newfoundland, with pressure reading at St. Johns 29 inches.

A high-pressure area that was central over North Dakota on the evening of the 15th remained practically stationary over that region until the evening of the 18th, at which time there was an offshoot over western Tennessee. Frost warnings were ordered for South Dakota, Nebraska, Kansas, Oklahoma, northern Texas, New Mexico and Colorado on the 16th, all of which were verified. On the morning of the 19th the high area was over the middle Mississippi Valley and upper Lake region. Frosts occurred in Iowa, southern Wisconsin, Illinois, Indiana, western Ohio, Kentucky, and central Tennessee, warnings of which had been previously issued. By the morning of the 20th the high was over the lower Lakes and frosts were reported in Maryland, eastern Pennsylvania, New Jersey, and parts of New York, notice of which was previously disseminated. It had passed off the coast by the following morning.

A slight disturbance that was central on the Alabama coast on the morning of the 20th moved to the coast of South Carolina by the evening of that date. This disturbance was of particularly marked severity in the vicinity of Charleston, S. C., the wind attaining a velocity of 69 miles an hour from the southeast at 5.21 p. m. of the 20th. By the following morning the center was south of Cape Hatteras, whence it passed northeastward into the ocean. Numerous severe thunderstorms and a number of tornadoes attended this storm during the afternoon and evening of the 20th over portions of Georgia, Alabama, South Carolina, and northern Florida. Excessive precipitation also occurred over the States mentioned.

The following weekly forecast was issued Sunday, April 21:

The indications are that during the coming week temperatures will average above the normal in the Southern and Eastern States and near or below the normal, with frosts, over the Middle West, the Rocky Mountain and Plateau regions. The weather during the week will be unsettled with well-distributed precipitation over the greater part of the country. A disturbance that is now over the Plains States will move eastward and pass down the St. Lawrence Valley Tuesday; it will cause general rains the first part of the week in the region east of the Mississippi River. Another disturbance will develop over the western Plateau Tuesday or Wednesday, cross the Middle West about Thursday and the Eastern States Friday; this disturbance will be attended by general rains and be followed by considerably cooler weather.

The next storm to cross the country apparently developed over the Plateau region during the 18th and by the morning of the 19th was central over southern Utah, precipitation having occurred quite generally throughout the Plateau region. By the morning of the 20th the storm center was over southeastern Colorado. It passed thence northeastward and on the morning of the 21st was over eastern Nebraska, having caused precipitation over the Plains States and the Upper Mississippi Valley. On the morning of the 22d the storm was over Lake Huron. Storm warnings were ordered for the Atlantic coast from Delaware Breakwater to Eastport on the evening of the 22d, and high winds occurred over the territory indicated within the next 24 hours. The storm on the morning of the 23d was over northern Maine with decidedly increased intensity. Tornadoes occurred in connection with this storm over portions of Kansas, Oklahoma, Illinois, Indiana, Missouri, and Alabama.

A high-pressure area, which developed in the rear of the low just referred to, was central on the morning of the 22d over the Texas Panhandle, causing heavy to killing frosts in Colorado, New Mexico, the Texas Panhandle, Nebraska, and Kansas, warnings of which had been previously disseminated. By the morning of the 23d the high was over western Tennessee and frosts occurred quite generally over the Ohio Valley and the Lake region. By the morning of the 24th the high was over the South Atlantic States and the following morning it had moved to West Virginia with increased intensity, passing off the Middle Atlantic coast.

From the evening of the 23d to the evening of the 24th conditions were unsettled over the middle Plateau region, and on the morning of the 25th a storm was central over western Nebraska. Storm warnings were ordered for the upper lakes during the afternoon of the 25th. On the morning of the 26th the storm had advanced to Minnesota with greatly increased intensity and storm warnings were ordered for Lake Erie and later in the day extended to Lake Ontario. Storm winds occurred over all lakes. On the morning of the 27th the storm center was over western Quebec and by the following morning was over the Canadian Maritime Provinces.

Following the passage of this low, a high-pressure area appeared over Saskatchewan on the morning of the 26th, and by the morning following had advanced to Manitoba. On the morning of the 28th it was over

Lake Huron with increased intensity, and by the morning of the 29th was over Quebec with greatly decreased intensity.

The following weekly forecast was issued Sunday, April 28:

The general distribution of barometric pressure over the North American Continent and the adjacent oceans is such as to indicate that there will be frequent and well-distributed showers and normal temperature the coming week throughout the country. Three barometric depressions will cross the country during the week and they will be attended by local rains and thunderstorms. The first of these storms is now over the Southwest, whence it will move northeastward and pass down the St. Lawrence Valley on Tuesday; the next disturbance to cross the country is off the North Pacific coast, whence it will move eastward and cross the Rocky Mountains Tuesday, the Middle West Wednesday, and the Eastern States about Thursday; the third storm will appear in the far West Thursday or Friday and prevail over the Middle West near the close of the week.

The next disturbance to cross the country appeared over the southern Plateau on the morning of the 26th, and by the following morning was over northwestern New Mexico. During the night of the 27th tornadoes occurred over portions of Oklahoma and southern Kansas. On the morning of the 28th the storm was over western Oklahoma with increased force, and by the morning of the 29th it was over southern Illinois. During the next 24 hours it advanced to North Carolina with decreased intensity, and at the end of the month it was off the middle Atlantic coast with still further loss of energy.

A high-pressure area of slight intensity followed the passage of the low before mentioned, and was central over the Plains States on the morning of the 29th. By the morning of the 30th the center of the high was over Lake Superior and at the end of the month it was over Lake Huron.

A low that appeared on the extreme north Pacific coast on the morning of the 29th moved to Alberta by the morning of the 30th.

TEMPORARY OR REPORTED CHANGES IN ALASKAN CLIMATE.

With reference to a discussion regarding the possible permanent changing of the climate of Alaska, due to the shifting of the Japanese current, which has attracted some attention, the following is submitted:

It is a fact that the months of January and February, 1912, gave temperatures above the seasonal average over the Alaskan area. It is also true that these months were warmer than the average on the Pacific slope of North America as far south as southern California and Arizona, while over the greater part of the United States and southern Canada east of the Rocky Mountains these two months were unusually cold. December was cold on the Pacific slope and in Alaska, and much warmer than the average east of the Rocky Mountains.

The part that the Japanese current played in the causation of the temperature conditions over Alaska and the Pacific States is a minor one, and wholly secondary to the distribution of atmospheric pressure and the resultant winds over the North Pacific Ocean and the interior of western Canada.

At Sitka, Alaska, in a period of 28 years, there were 18 Decembers warmer than that of 1911; and 4 years when January was warmer than the same month in 1912; while the temperature for February, 1912, 41°, is the highest of record during the period. The next warmest February was that of 1902, when the average temperature was 39.6°.

At Nome, Alaska, in a period of 6 years there were 4 Decembers warmer than this month in 1911. January, 1912, was the warmest January in this period, while February, 1908, was the warmest February.

It is a fact that the atmospheric pressure for the past winter averaged below normal over the Alaskan area, it being decidedly so in the month of February, when the excess of temperature in this region was marked. It is also true that in January and February the pressure was above the normal off the California and Oregon coasts and over western Canada. This leads to the assumption that the circulation of the winds around the high-pressure area in middle latitudes of the Pacific Ocean and their northward deflection into the low-pressure area over Alaska was the real cause of the warm weather in the latter region in January and February, 1912. The extension of the Japanese current to the northward of its normal course, so far as this happened at all, probably only on the surface, was doubtless incidental to this pressure distribution and the resulting winds. As soon as the usual pressure distribution was reestablished, normal temperature conditions again set in over Alaska.

Average temperatures and departures from the normal.

Districts.	Number of stations.	Average temperatures for the current month.	Departures for the current month.	Accumulated departures since Jan. 1.	Average departures since Jan. 1.
New England	12	43.9	+0.3	−10.2	−2.6
Middle Atlantic	15	52.2	+1.7	−10.5	−2.6
South Atlantic	10	64.4	+3.1	− 6.2	−1.6
Florida Peninsula[1]	9	74.2	+3.7	− 0.2	0.0
East Gulf	11	65.9	+1.3	− 9.4	−2.9
West Gulf	11	56.6	−0.2	−13.6	−3.4
Ohio Valley and Tennessee	14	56.9	+2.2	−16.8	−4.2
Lower Lakes	11	45.2	+0.1	−20.9	−5.2
Upper Lakes	13	41.9	+1.1	−23.3	−5.8
North Dakota[1]	9	44.5	+3.7	− 7.0	−1.8
Upper Mississippi Valley	14	51.9	+1.4	−23.0	−5.8
Missouri Valley	12	52.6	−2.1	−14.6	−3.6
Northern slope	10	44.1	+1.3	− 6.7	−1.7
Middle slope	6	52.6	−1.1	−16.2	−4.0
Southern slope[1]	8	60.6	−1.0	−12.7	−3.2
Southern Plateau[1]	9	55.7	−3.3	− 4.4	−1.1
Middle Plateau[1]	10	43.5	−3.3	+ 1.3	+0.3
Northern Plateau[1]	11	46.8	−0.3	+ 0.4	+0.1
North Pacific	7	47.4	−1.0	+ 5.6	+1.4
Middle Pacific	7	50.9	−2.7	− 0.1	0.0
South Pacific	4	55.2	−2.8	+ 2.6	+0.6

[1]Regular Weather Bureau and selected cooperative stations.

Average precipitation and departures from the normal.

Districts.	Number of stations.	Average.		Departures.	
		Current month.	Percentage of normal.	Current month.	Accumulated since Jan. 1.
New England	12	3.27	109	+0.2	+ 0.7
Middle Atlantic	15	2.87	93	−0.2	+ 0.5
South Atlantic	11	3.91	115	+0.5	+ 1.2
Florida Peninsula[1]	9	3.27	208	+1.7	+ 5.0
East Gulf	11	10.40	254	+6.3	+10.1
West Gulf	12	4.61	131	+1.1	+ 0.7
Ohio Valley and Tennessee	14	6.44	177	+2.8	+ 2.1
Lower Lakes	11	3.09	121	+0.7	+ 0.6
Upper Lakes	13	2.50	109	+0.2	− 2.3
North Dakota[1]	9	2.20	137	+0.6	− 0.7
Upper Mississippi Valley	15	3.77	127	+0.8	− 0.7
Missouri Valley	11	2.97	103	+0.1	+ 0.7
Northern slope	9	1.74	113	+0.2	+ 0.2
Middle slope	6	1.98	91	−0.2	+ 0.4
Southern slope[1]	8	2.41	100	0.0	0.0
Southern Plateau[1]	9	0.52	124	+0.1	− 0.2
Middle Plateau[1]	11	1.00	91	−0.1	0.0
Northern Plateau[1]	11	1.60	133	+0.4	0.0
North Pacific	7	2.67	82	−0.6	− 3.5
Middle Pacific	7	2.42	120	+0.4	− 4.2
South Pacific	4	1.98	202	+1.0	− 0.4

[1] Regular Weather Bureau and selected cooperative stations.

Average relative humidity and departure from the normal.

Districts.	Average.	Departure from normal.	Districts.	Average.	Departure from normal.
New England	75	+2	Upper Mississippi Valley	69	+ 1
Middle Atlantic	72	+5	Missouri Valley	64	− 1
South Atlantic	75	+3	Northern slope	63	+ 5
Florida Peninsula	79	+5	Middle slope	59	+ 2
East Gulf	77	+7	Southern slope	52	− 3
West Gulf	74	+2	Southern Plateau	43	+13
Ohio Valley and Tennessee	69	+4	Middle Plateau	54	+ 9
Lower Lakes	74	+4	Northern Plateau	60	+ 3
Upper Lakes	73	0	North Pacific	78	+ 7
North Dakota	67	−1	Middle Pacific	73	+ 1
			South Pacific	73	+ 5

Average cloudiness and departure from the normal.

Districts.	Average.	Departure from normal.	Districts.	Average.	Departure from normal.
New England	6.3	+0.8	Upper Mississippi Valley	5.8	+0.6
Middle Atlantic	6.0	+0.8	Missouri Valley	5.1	−0.5
South Atlantic	5.3	+0.7	Northern slope	5.3	+0.2
Florida Peninsula	4.9	+1.1	Middle slope	4.9	+0.3
East Gulf	6.3	+1.4	Southern slope	4.2	−0.5
West Gulf	5.9	+0.8	Southern Plateau	3.1	+0.3
Ohio Valley and Tennessee	5.8	+0.5	Middle Plateau	5.9	+1.4
Lower Lakes	5.7	0.0	Northern Plateau	6.8	+1.6
Upper Lakes	5.5	0.0	North Pacific	7.2	+1.0
North Dakota	4.6	−0.7	Middle Pacific	5.4	+1.0
			South Pacific	4.8	+0.8

Maximum wind velocities, April, 1912.

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
Block Island, R. I.	23	54	w.	Nantucket, Mass.	7	50	sw.
Charleston, S. C.	20	67	se.	Nashville, Tenn.	26	50	nw.
Cheyenne, Wyo.	13	62	nw.	New York, N. Y.	3	56	nw.
Chicago, Ill.	26	51	s.	Do.	7	68	sw.
Cleveland, Ohio.	26	58	s.	Do.	8	60	nw.
Columbus, Ohio.	7	54	nw.	Do.	9	51	sw.
Dayton, Ohio.	22	57	sw.	Do.	19	50	nw.
Do.	26	52	se.	Do.	23	84	nw.
Detroit, Mich.	9	50	w.	Do.	24	54	w.
Duluth, Minn.	26	70	nw.	Do.	27	58	n.
El Paso, Tex.	12	58	w.	Do.	28	52	n.
Fort Worth, Tex.	27	50	s.	North Head, Wash.	27	50	se.
Green Bay, Wis.	6	50	s.	Do.	28	52	se.
Do.	26	55	sw.	Do.	29	56	se.
Hatteras, N. C.	22	60	s.	Oklahoma, Okla.	20	50	se.
Kansas City, Mo.	14	51	sw.	Pensacola, Fla.	17	56	s.
Lander, Wyo.	5	54	sw.	Pittsburgh, Pa.	7	50	nw.
Do.	29	52	sw.	Point Reyes Light, Cal.	4	51	nw.
Lexington, Ky.	2	60	w.	Do.	11	51	nw.
Minneapolis, Minn.	21	52	n.	Do.	16	54	nw.
Modena, Utah.	18	52	sw.	Do.	17	74	nw.
Mount Weather, Va.	2	77	nw.	Do.	18	77	nw.
Do.	3	64	nw.	Do.	19	69	nw.
Do.	7	74	nw.	Do.	20	54	nw.
Do.	8	62	nw.	Do.	24	52	nw.
Do.	18	53	nw.	Do.	26	54	nw.
Do.	19	54	nw.	Do.	28	69	s.
Do.	22	58	w.	Providence, R. I.	23	50	w.
Do.	23	72	nw.	Pueblo, Colo.	13	54	nw.
Mount Tamalpais, Cal.	11	66	nw.	St. Louis, Mo.	25	50	se.
Do.	12	54	nw.	Sault Ste. Marie, Mich.	27	50	w.
Do.	16	53	nw.	Savannah, Ga.	22	53	w.
Do.	17	60	nw.	Southeast Farallon, Cal.	18	52	nw.
Do.	18	68	nw.	Do.	19	53	nw.
Do.	19	66	nw.	Syracuse, N. Y.	26	50	s.
Do.	20	58	nw.	Toledo, Ohio.	9	53	sw
Do.	21	66	nw.	Do.	15	54	sw.
Do.	24	61	nw.	Do.	26	57	sw.
Do.	26	54	nw.				
Do.	29	53	nw.				